

AMENDMENTS TO THE WRITTEN DESCRIPTION:

Please replace paragraph [0010] with the following two paragraphs:

[0010] Another embodiment of the present invention is directed to a method of fabricating a PIN radiation detector device. In the method, a substrate is provided that has an intrinsic active layer, a handle layer, a contact layer that has a first electrical conductivity (e.g., n or p-type) disposed between the active and the handle layers, and a buried oxide layer disposed between the contact layer and the handle layer. A portion of the active layer is then removed to expose a first surface of the conductive contact layer. A material having a second electrical conductivity type (e.g., p or n-type) is introduced within the active layer at a detector site, such that the material is separated from the contact layer by at least a portion of the intrinsic active layer. A first electrically conductive terminal is formed to electrically couple with the contact layer at the first surface, and a second electrically conductive terminal is formed to electrically couple with the introduced material.

[0010A] Another embodiment is a method of fabricating an array of p-intrinsic-n detector devices. In this method, an opening is made through an intrinsic active layer of a substrate to expose a first surface of an embedded contact plate. The contact plate has a first electrical conductivity type. The substrate further includes a handle layer disposed such that the contact plate is disposed between the handle layer and the active layer. A material is introduced into the intrinsic active layer, at each of a plurality of detector sites, such that at least a portion of the active layer lies between the material and the contact layer at each detector site. The material has a second electrical conductivity type. At least one first conductive terminal is formed that is electrically coupled to the first surface of the contact plate. Also, a plurality of second conductive terminals are formed. Individual ones of these second terminals are electrically coupled to the material at individual ones of the detector sites. The wafer is then hybridized to a read out integrated circuit through the conductive bumps. After hybridizing, at least a part of the handle layer is removed to expose a second surface of the contact layer that faces opposite the active layer, where the second surface is a radiation receiving surface.